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December 7, 1999

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By Hand

Ms. Magalie Roman Salas, Secretary
Federal Communications Commission
445 Twelfth Street, S.W., TW-A325
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Re: *Ex Parte* Presentation
Globalstar USA, Inc., Globalstar, L.P.
ET Docket No. 98-142

Dear Ms. Salas:

This letter serves as notification that on December 7, 1999, Mike Scullin, Mike Kozlowski, Tim Cooney and Luisa Lancetti (representing Globalstar USA, Inc.), and Bill Wallace and Dave Weinreich (representing Globalstar, L.P.), had a meeting with Julius Knapp, Tom Derenge, Geri Matisse and Tom Mooring (of the Office of Engineering and Technology), Howard Griboff and Alexander Roytblat (of the International Bureau) and Michael Pollak (of the Wireless Telecommunications Bureau) to discuss issues concerning the above-captioned proceeding. In particular, the parties discussed MSS feeder link usage and the need for effective co-primary use of the 6700-7075 MHz band. A copy of the presentation material, which was distributed and discussed at this meeting, is attached hereto.

Pursuant to Section 1.1206(a), an original and one copy of this letter are being filed with your office. Please associate this letter with the file in the above-captioned proceeding.

Please contact us should you have questions concerning the foregoing.

Sincerely yours,

WILKINSON BARKER KNAUER, LLP


By: Luisa L. Lancetti
Counsel for Globalstar USA, Inc.

Attachment

cc: Julius P. Knapp
Tom Derenge
Geri Matisse
Tom Mooring
Howard Griboff
Alexander Roytblat
Michael Pollak

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Globalstar USA, Inc.

Globalstar, L.P.

**Amendment of Parts 2, 25 and 97 of the Commission's Rules
with Regard to the Mobile Satellite Service
Above 1 GHz ("NGSO MSS")
(ET Docket No. 98-142)**

***EX PARTE* PRESENTATION
December 7, 1999**

A Key Pending Issue: 6700-7075 MHz Feeder Links

- WRC-95 globally allocates 6700-7075 MHz band to NGSO MSS feeder links. In 1995, FCC issues satellite license to L/Q Licensee with conditional authority to use 6875-7055 MHz for feeder links. In 1998, FCC proposes to allocate 6700-7075 MHz band to fixed satellite service on a co-primary basis for NGSO MSS feeder links.
- 6875-7125 MHz band, however, also is allocated to the broadcast auxiliary service (BAS); and the band is used for television pickup stations (TVPU)s, including airborne TVPU)s.
- There is general agreement that proposed PFD limits for the NGSO MSS feeder link allocation will ensure that no interference will be caused to TVPU)s from MSS feeder links. But MSS feeder link gateways may experience interference from 7 GHz mobile TVPU)s (likely only from airborne TVPU)s) in absence of frequency coordination. MSS operators cannot unilaterally take actions that would avoid interference to their fixed MSS gateways from airborne TVPU)s.
- Society of Broadcast Engineers (SBE) proposes that existing and future mobile TVPU)s be given priority over all NGSO MSS earth stations and that MSS gateways be excluded for 100 km from top 100 TV markets. This proposal is tantamount to relegating NGSO MSS feeder links to secondary status, compromising the NGSO MSS feeder link allocation.

- SBE proposal is overly broad and harmful to MSS: it would exclude MSS gateways from one-third to one-half of U.S., regardless of whether any 7 GHz airborne TVPUs actually operate in these areas. Moreover, the use of airborne TVPUs is intermittent and usually for short-time periods, resulting in inefficient use of the spectrum band if MSS feeder links are precluded from operating. Once an earth station is built, NGSO MSS feeder links continuously operate and cannot tolerate interference at discretion of airborne TVPUs.
- WRC-95 has recognized that allocation of 6700-7075 MHz band for MSS NGSO feeder links is workable on a co-primary basis. FCC should implement a solution which permits both NGSO MSS feeder links and TVPUs to operate reliably.
- Commercialization of Globalstar system is imminent, requiring prompt FCC action. Globalstar USA already has license for MSS gateway in Clifton, Texas; this facility is remotely located but, depending on interpretation, potentially within SBE's proposed exclusion zone. Under SBE's proposal, MSS service operations would be subject to a real and immediate threat.

Proposed Solution for Co-Primary Use By MSS Feeder Link Earth Stations And Airborne TVPUs

- **RETAIN** true co-primary status of MSS feeder links and TVPUs. Reject SBE proposal because it is overly broad - - geographically and otherwise. Airborne TVPUs have multiple other band options and, in fact, generally use 2 GHz frequencies for transmissions; in many markets 7 GHz BAS channels are used only for fixed links.
- **RECOGNIZE** that potential interference would be caused by mobile TVPUs to fixed MSS feeder links. MSS gateways require interference protection because, once constructed, they cannot move or adjust to TVPU interference. Only mobile TVPUs are capable of taking actions to avoid occurrence of transient interference to MSS gateways.
- **REQUIRE** MSS operator and BAS licensees to participate in first-in-time coordination protocol to avoid and/or mitigate instances of interference. "Roving" airborne TVPUs operating in 7 GHz channels should (1) be required to contact coordinator to identify locations of MSS gateways and, if needed, (2) be required to use channels at 7075-7125 MHz near MSS gateways, or (3) be relocated to bands other than 6875-7075 MHz.
- **ESTABLISH** first-in-time protection zones for co-frequency users. MSS gateways will avoid areas in which airborne TVPUs operating on 7 GHz channels are prevalent; but, once built, MSS gateways require protection from second-in-time and currently licensed "roving" airborne TVPUs.

Characteristics of MSS Gateways

- Globalstar network is multi-billion dollar system. MSS gateways are few, but expensive (over \$10M each) and immovable. For Globalstar USA, no more than 6 gateways in continental U.S. should adequately serve the U.S. market. Not anticipated that MSS industry as a whole will exceed 25 gateways in CONUS.
- Globalstar USA gateways are planned for relatively remote areas (but because they require power supplies, etc., they must be near resources). Globalstar USA gateways should be able to coordinate around first-in-time fixed BAS stations and avoid areas where 7 GHz band currently is used by airborne TVPUs, thereby minimizing potential interference.
- Globalstar USA gateways are susceptible to transient interference from mobile TVPUs, both ground-based and airborne. Interference to gateways from ground-based mobile TVPUs is unlikely, unless mobile TVPU is operated in location where the MSS gateway is between the mobile and the TVPU hub station. Interference to MSS gateways from airborne TVPUs, however, may occur in certain limited cases on a transient basis, with harmful results.

Characteristics of Airborne TVPUs

- The 2 GHz band is favored for airborne TVPU operations because of propagation characteristics and small number of fixed links in the band. The 6.5 and 7 GHz bands also are used for airborne TVPU operations in some markets. Airborne TVPUs are not subject to interference from MSS gateways, but 7 GHz TVPUs may cause interference to MSS gateways on transient basis.
- According to SBE, FCC authorizations to airborne TVPUs may be granted on nationwide basis, making it impossible for MSS gateways to coordinate around airborne TVPUs using co-frequency 7 GHz channels.
- TVPUs can avoid interfering with MSS gateways by following proposed coordination protocols and by exercising existing options to select video channels allocated to BAS outside of the MSS feeder link band (for example, seven channels at 2 GHz, four channels at 6.5 GHz, and two channels in 7075-7125 MHz band). The few "roving" TVPUs using 7 GHz channels should not be allowed to compromise the NGSO MSS feeder link allocation; these stations could use alternate channels at 6/7 GHz or could be relocated to other already available BAS bands.

Solution Should Be Reciprocal, Easy to Accomplish, And Proportionate to the Transient Interference Potential

- With limited adjustments by both services, MSS gateways and mobile TVPUs (even with nationwide or statewide authorizations) are compatible.
- NGSO MSS feeder link gateways require protection from airborne TVPUs (either geographic or frequency separation). FCC should establish coordination database and protocols whereby MSS operators may join local coordination groups. Mobile TVPUs should be required to check before operation whether they are in MSS gateway protection zone, and, if so, select a non-conflicting channel.
- FCC should condition MSS gateway and TVPU licenses (and adopt new regulations) to require compliance with case-by-case reciprocal protection zones, when established. The first-in-time priority of airborne 7 GHz TVPUs must be limited to their predominant service areas. First-in-time rights protect existing 7 GHz TVPUs, without the adoption of across-the-board exclusion zones, because on case-by-case basis MSS operators probably must locate away from areas of active TVPU usage. New TVPUs and “roving” nationwide TVPUs must coordinate under procedures similar to 47 CFR 74.638 and avoid 6700-7075 MHz band within the gateway’s first-in-time protection zone.
- Outside of MSS gateway protection zones (most areas of the country), TVPUs may operate same as today. Inside MSS protection zones, TVPUs may operate on any BAS channels except those for which MSS feeder links have co-primary status.

Globalstar USA, Inc.
Globalstar, L.P.
ET Docket No. 98-142
Mobile Satellite Service Above 1 GHz.

1. Sharing Between NGSO MSS and Terrestrial Stations at 6/7 GHz

The broadcast and FS communities have raised concerns with regard to the allocation for feeder downlinks at 6700-7075 MHz.

- It is claimed that the band is heavily used now for BAS and/or FS. According to the FS and BAS comments, the MSS community has not demonstrated that FS and BAS stations will be adequately protected.
- A fear was expressed that the recommended PFD limits for NGSO MSS feeder links are sufficient to protect analog stations but may not be sufficient to protect digital stations.

2. Protection Requirements Generally for FS and BAS

In proposing the allocation for NGSO MSS feeder links at 6/7 GHz, the Commission is also proposing to adopt the ITU's recommended PFD limits.

- The ITU took into account the need to protect FS and BAS users in the band. WRC-95 adopted PFD limits for space-to-earth feederlinks in these bands specifically to protect terrestrial stations.
- The PFD limits for feederlink space-to-earth transmissions adopted at WRC-95 for the 6700-6825 MHz are:

Reference Bandwidth	0-5 degrees	5-25 degrees	25-90 degrees
1 MHz	-137	$-137 + 0.5(\delta - 5)$	-127

Limit in dB(W/m²) for Angle of Arrival δ
Above the Horizontal Plane

- The PFD limits for feederlink space-to-earth transmissions adopted at WRC-95 for the 6825-7075 MHz are:

Reference Bandwidth	0-5 degrees	5-25 degrees	25-90 degrees
4 kHz	-154	$-154 + 0.5(\delta - 5)$	-144
1 MHz	-134	$-134 + 0.5(\delta - 5)$	-124

Limit in dB(W/m²) for Angle of Arrival δ
Above the Horizontal Plane

- In its proceeding to prepare for WRC-95, the Commission recognized that the CPM was studying the sharing environment for terrestrial stations and NGSO MSS feederlinks in the 6/7 GHz band, and that those studies would form the basis for any need to address specific concerns from the FS and broadcasters.
- The Commission has indicated that the need for further study would not bar the allocation for NGSO MSS feederlinks: “this should not be a hindrance to making spectrum available internationally for feeder links at WRC-95.” Report, 10 FCC Rcd 12783, ¶ 54 (1995).

3. Protection for Digital Operations

Contrary to the claims of the FS and BAS commenters, digital operations of FS and BAS stations in these bands has been a component of every study in the United States and ITU.

- WRC-95 CPM developed analyses of “Fractional Degradation in Performance” (“FDP”) to study the impact of satellite transmissions on terrestrial digital operations. See WRC-95 Final Acts, Res. 46, Annex 2, A2.1.2.1 (“to facilitate sharing between digital fixed service (FS) stations and NGSO MSS space stations, the concept of fractional degradation in performance was adopted”); CPM Report, § 3.6.4.3.
- Each recommended PFD standard includes a PFD level with a reference bandwidth of 4 kHz for protection of analog stations, and a PFD level with a reference bandwidth of 1 MHz for protection of digital stations, which would be more stringent than the equivalent of the analog limit extended to 1 MHz.
- Indeed, the recommendation of the CPM for protection of digital stations (-130 dB(W/m²/1 MHz)) was made more stringent by WRC-95. The CPM found that an NGSO MSS satellite system with parameters like Globalstar “can share quite easily” with digital FS systems at 6 GHz. CPM Report, § 3.6.4.5.

4. Coordination Between NGSO MSS Earth Stations and FS/BAS Stations

The broadcasters and FS recommended that the FCC adopt “sensible sharing and coordination procedures.” NAB Reply Comments, at 3. Such procedures should include detailed technical information on operation of the earth station. TIA Comments, at 6. Earth station operators should be required to coordinate with broadcasters so that the latter know where earth stations are located and what protection criteria need to be employed for new BAS links. SBE Comments, at 3. The proposals outlined by Globalstar USA, Inc., and Globalstar, L.P., satisfy these requests.

Background of Globalstar Feeder Link Status

June 1991	Globalstar submits MSS applications.
WARC - 1992	U.S. achieves international allocation of MSS service link spectrum in the 1.6/2.4 and 2 GHz band -- but not for feeder link allocations.
Early 1993	The FCC and Industry begin working toward the international allocation of MSS feeder link spectrum. The FCC begins the licensing process for the Big Leo service link spectrum; feeder link spectrum awaits international allocations.
October 1994	FCC establishes rules for NGSO MSS Systems; finds Big LEO service has potential to stimulate multi-billion dollar industry and can link Americans in rural areas, and others throughout the world, to a feature-rich communications network.
January 1995	FCC issues license to L/Q Partnership with "conditional" feeder link authority.
June 1995	FCC concludes that obtaining spectrum for NGSO MSS feeder link is "critical for initiating Big LEO services"; acknowledges that feeder links "must have a regulatory base which permits their orderly operation without any regulatory uncertainties to their full operational life."

WRC - 95	The US Industry and Government are successful in winning global allocations of MSS feeder link spectrum in the 5091-5250 and the 6700-7075 MHz band.
November 1996	FCC grants waiver authorizing L/Q to use 6875-7055 MHz band for feeder links.
February 1998	FCC grants earth station license to Globalstar USA, Inc. for Clifton, Texas Gateway to use 6875-7055 MHz band for feeder links.
Late 1999	<p>Development of Globalstar system is completed.</p> <p>Design parameters have long been finalized and significant changes are not feasible.</p> <p>Commercialization is imminent. The potential for an almost limitless number of services and the public benefits resulting from global development of a nearly ubiquitous communications infrastructure are within reach.</p>
